REMARKS

Claims 1-4, 6-15, 17-41 and 43-48 are pending.

Claims 14-15 and 19-41 have been withdrawn in view of a restriction requirement.

I. 35 USC §112, first paragraph

Claims 1-4, 6-13, 17, 18 and 43-48 are rejected as failing to comply with the written description requirement. Claims 6 and 7 were amended previously to recite "weight average".

It is respectfully submitted this does not present new matter.

The present application in the next to last paragraph of the summary of the invention states, "All percentages, ratios and proportions herein are by weight, unless otherwise specified." This supports the default value being weight for the characteristic of average molecular weight. To calculate weight average molecular weight or number average molecular weight one groups together the amounts of molecules in various weight ranges such that the proportions of the molecules in the various groups are a factor in the calculation. Moreover, unlike number average, the weight average molecular weight has a weight component in both the numerator and denominator. Weight average molecular weight is calculated as follows: $Mw= (\sum_i N_i M_i^2)/(\sum N_i M_i)$. Number average molecular weight is calculated as follows: $Mn= (\sum_i N_i M_i)/\sum N_i$.

Also, as explained in the previously filed Rule 132 Declaration by Vance Bergeron, at the time the parent of the present application was filed, on May 26, 1999, particularly for polymers to be used for detergents, this was the unit by default. For high molecular weight polymers like the ones commonly used in detergency, weight average molecular weight measurements are more accurate. Number average molecular weight may be more relevant for small molecular weight polymers such as dispersants (less than 10000 daltons).

II. 35 USC §112, second paragraph

Claims 1-4, 6-13, 17, 18 and 43-48 are rejected under 35 USC §112 as being indefinite. The Office action asserts the term "weight average" added to Claims 6 and 7 is new matter. Thus, the Office action asserts the claims recite an average weight range, without specifying if it is a weight average molecular weight range or a number average molecular weight range.

Although Applicant previously submitted the Rule 132 Declaration by Vance Bergeron in support of the prior amendment, the Office action asserts the specification and original set of claims do not support the amendment.

As explained above, it is respectfully submitted the present application in the next to last paragraph of the summary of the invention states, "All percentages, ratios and proportions herein are by weight, unless otherwise specified." This supports the default value being weight for the characteristic of average molecular weight.

Moreover, it is respectfully submitted the specification and claims should be interpreted as they would be by one skilled in the art. What is conventional or well known to one of ordinary skill in the art need not be disclosed in detail. Hybritech Inc. v. Monoclonal Antibodies, Inc. 802 F.2d 1367, 1384, 231 USPQ 81, 94 (fed. Cir. 1986). According to the Bergeron Declaration one skilled in the art would consider weight average molecular weight the default parameter for the types of molecules being claimed.

III. 35 USC §102/103 Rejection in View of Fink et al.

Claims 1-13, 17-18 and 43 are rejected under 35 USC §102 as being anticipated, or in the alternative under 35 USC 103 as being unpatentable, in view of Fink et al. (US 4,542,175).

In view of a species election, Applicants' elected the species of claims 1-13 and 16-18 and 43, exemplified in Example 1 of the specification (page 139). This species is a poly(HEA-co-DMAM-co-AA) terpolymer. HEA is 2-hydroxyethyl acrylate; DMAM is 2-(dimethylamino)ethyl methacrylate; and AA is acrylic acid.

The Office action again asserts Fink et al. (col. 5, line 3 to col. 6, line 42) disclose terpolymers comprising DMAM, HEA and AA. This rejection is respectfully traversed.

A. The Present Claims are Outside the Molecular Weight of Fink et al.

Claim 7, and all of the other claims dependent thereon, recite the polymer has a weight average molecular weight of about 10,000 to about 300,000 daltons or a narrower range. In contrast, the Fink et al., Abstract and col. 2, lines 44-45, states its synthetic polymer has a molecular weight of at least 500,000.

The Office action is not persuaded that both Fink et al. and the instantly claimed invention use weight average molecular weight for describing the molecular weights of polymers. The Office action asserts applicants did not submit any reference materials stating the traditional molecular weight characterizations are done in weight averages, instead of number averages that are typically used for low molecular weight compounds. It is respectfully submitted the Bergeron Declaration is sufficient for this proposition. Furthermore, as explained above, the present

application in the next to last paragraph of the summary of the invention states, "All percentages, ratios and proportions herein are by weight, unless otherwise specified."

Thus, as explained in the previously filed Rule 132 Declaration by Vance Bergeron, the present application claims, e.g. Claim 7, recite ranges in weight average molecular weight and the polymers described in US 4,542,175 to Fink et al. are in weight average molecular weight. Thus, the presently claimed ranges and the range of US 4,542,175 to Fink et al. do not overlap.

Moreover, a weight average molecular weight is generally higher than a number average molecular weight. Thus, if the range of US 4,542,175 to Fink et al. was a number average molecular weight range then the corresponding weight average molecular weight range would be higher and further removed from the presently claimed weight average molecular weight ranges. Thus, since the molecular weight ranges of the present application claims are weight average, Fink et al. is avoided regardless of whether it is number or weight average.

Thus, the rejection of claims 1-4, 6-13, 17-18 and 43 as anticipated by or in the alternative as obvious over Fink et al. should be withdrawn.

The Office action also asserts that even assuming the amendment to weight average is accepted the Claims 1-13, 17-18 and 43 would still be rejected under 35 USC §103.

The Office action asserts the minor change in molecular weight as compared to the disclosed composition is considered obvious motivated by the expectation that polymers having different molecular weight would have different utilities. This assertion is respectfully traversed.

Claim 7, and all of the other claims dependent thereon, recite the polymer has a weight average molecular weight of about 10,000 to about 300,000 daltons or a narrower range. In contrast, the Fink et al., Abstract and col. 2, lines 44-45, states its synthetic polymer has a molecular weight of at least 500,000. It is respectfully submitted the difference between 300,000 and 500,000 is not a minor change.

Fink, et al., col. 2, lines 44-46, states, “The polymer has a molecular weight of at least 500,000 and is water soluble or at least collodially dispersible at a pH value below 7.”

Fink, et al., col. 3, lines 13-17, states, “The polymer in the salt form, either in the genuine dissolved or colloidally dispersed condition, must have a thickening effect, for which a molecular weight of at least 500,000, and preferably more than one million, is necessary.

Thus, Fink, et al. teaches away from the presently claimed ranged.

Moreover, the assertion of the Office action that polymers having different molecular

weight would have different utilities is an overstatement. No reference is provided to teach or suggest a use. Some molecular weight ranges for some polymers could have no practical use.

The Office action also asserts the polymer prepared by Fink et al. must have gone through the low molecular weight polymers before reaching the high molecular weight as disclosed.

It is respectfully submitted this is an incorrect basis for a rejection. As explained in MPEP 2144.09, if the prior art merely discloses compounds as intermediates in the production of a final product, one of ordinary skill in the art would not ordinarily stop the reference synthesis and investigate the intermediate compounds with an expectation of arriving at claimed compounds which have different uses. *In re Lalu*, 747 F.2d 703, 223 USPQ 1257 (Fed. Cir. 1984).

B. Molecular Weight Recited By Dependent Claims

Claim 6 recites a weight average molecular weight of about 10,000 to about 100,000 daltons. Claim 43 recites a weight average molecular weight of about 35,000 to about 300,000 daltons.

In contrast, the Fink et al., Abstract and col. 2, lines 44-45, state its synthetic polymer has a molecular weight of at least 500,000. Thus, Fink et al. teaches away from all of the claims as currently amended.

C. Fink et al. Does Not Select the Present Polymer

The Office action asserts that, even if the cited polymers of Fink et al. are not the preferred compounds, they are clearly disclosed by Fink et al.

Applicant replies there are too many compounds in Fink et al. to make a Section 102 anticipation rejection even if the weight average molecular weight feature is discounted.

Fink et al., col. 5, lines 27-30, mentions dimethylaminoethyl methacrylate as one of a number of a large number of monomer component (A) of its synthetic polymers, which include the esters of alpha and beta unsaturated polymerizable monocarboxylic or dicarboxylic acids having at least one basic nitrogen atom in the alcohol portion that are disclosed as the preferred component A in view of their thickening properties (see Col. 5 lines 3-64), but as Applicants previously pointed out, Fink et al. disclosed:

> "Those esters which contain an ethylene group as R1 give dispersions which have a tendency to thicken even above a pH of 7 and, to be sure, tend all the more to thicken the smaller the total alcohol portion of the ester is. For this reason, dispersions of polymers containing dimethylaminoethyl methacrylate are not

among the preferred embodiments of the invention."

Thus, Fink et al. does not recommend the selection of DMAM, from the large group of its monomer component A to be used in the reaction with the weakly water soluble monomers of the disclosed monomers (B) or the readily water soluble monomers (C) which are individually or both reacted with the Component (A) monomers to increase the hydrophilicity of the resulting emulsion polymer (see Col. 6, lines 42).

Applicants respectfully assert the Office action's selection of DMAM from Fink's list of components (A), which was clearly not of the preferred group of monomers in Fink et al. with HEA and AA is solely motivated by the impermissible use of hindsight and does not anticipate or make obvious the specific copolymers and terpolymers of Applicants' invention.

As shown in Example 1, for instance, when 9 mmoles of HEA (25.0 gr.) are reacted with 3mmoles of DMAM (11.28 gr.) and 1mmole of AA (1.72 gr.), the resulting polymer would contain more than 70% by weight of the HEA and AA components. This is significantly above any level of use of these components in Fink et al. even if one skilled in the art should be motivated to select these individual members of the monomers disclosed in Fink et al.

Also, Fink et al. fails to even disclose whether it tested a homopolymer or a copolymer of DMAM. Thus, it does not direct one skilled in the art to select DMAM as a homopolymer or a copolymer. Moreover, even if it did suggest using DMAM, there is no teaching to combine this non-preferred moiety with HEA, which is taught to be disadvantageous in many cases, and acrylic acid which is taught to be disadvantageous in many cases, to arrive at the DMAM-HEA-AA copolymer species elected for examination from the present invention.

IV. Dependent Claims 10 and 13 and New Claims 45-48 Further Distinguish Over Fink et al.

A. Cationic Charge Density

The Office action asserts in view of the substantially identical composition, there is a reasonable basis for the Fink materials to inherently possess the claimed cationic charge density, pH, hydroxyl group density, and anionic charge at a pH from about 4 to about 12.

This assertion is respectfully traversed. Fink et al. does not teach to obtain the selected charge densities of present Claims 1 and 2. Claim 1 recites an average cationic charge density of 2.77 or less units per 100 daltons molecular weight at a pH of from about 4 to about 12. Claim 2

recites an average cationic charge density from about 0.01 to about 2.75 units per 100 daltons molecular weight at a pH of from about 4 to about 12. As disclosed in Applicants' specification, the cationic charge relates to the molar ration of the monomer units A, B and optional unit C used in the synthesis of the copolymers and terpolymers.

Paragraph 5 of the previously filed Rule 132 Declaration (by an apparent typographical error it is entitled a "Rule 123 Declaration") explains the present invention co- and terpolymers contrast with the compounds of Fink et al. The charge density of the present amine based polymers is critical for suds stabilization via favorable polymer interactions with soils, thus preventing soil antifoam effects. As wash pH varies so can the cationic charge density which can cause negative interactions with any anionic surfactant that is present, leading to a loss of suds. To reduce the cationic charge and pH dependence of the soil/polymer interaction for the polymer, several alternative mechanisms, together with cationic charge, to increase polymer/soil interactions may be used. They are: 1) lower the overall charge density to minimize cationic charge and pH dependence on the polymer/soil interaction via the introduction of non-charged co-monomers with dimethylaminoethyl methacrylate, and 2) increase hydrophobicity to drive the soil/polymer interaction away from electrostatic and closer to hydrophobic interaction via more hydrophobic non-charged co-monomers with dimethylaminoethyl methacrylate.

Moreover, as explained at page 11 of the application, Hydroxyl group density is a calculated value. Unless the ingredient amounts are selected properly, the value is not achieved. There is no teaching or suggestion in Fink et al. specific enough to result in a DMAM, HEA, AA terpolymer inherently having this characteristic.

C. Acrylic acid-containing terpolymer

It is also respectfully submitted that Claim 17, which recites acrylic acid-containing terpolymers, further distinguishes from the cited reference. The Office action asserts component (C) is optional in the claimed invention. However, this is incorrect for a number of claims, for example Claims 10, 12, 17, 40, 45, 46 and 48. As stated above, Fink et al. expressly teaches acrylic acid moieties are disadvantageous in many cases.

Applicants again note Claim 17 recites the polymer of Claim 7, selected from the group consisting of:

poly(HEA-co-DMAM-co-AA) terpolymer,

poly(HPA-co-DMAM-co-AA) terpolymer, and

poly(PEG-acrylate-co-DMAM-co-AA) terpolymer.

If the elected species is found allowable, it is respectfully submitted a reasonable number of other species, for example, at least those of Claim 17, should also be examined.

V. Conclusion

In view of the current amendments to the claims and the reasons set forth above, it is respectfully submitted that all objections rejections have been overcome. Thus, a Notice of Allowance is respectfully requested.

Please charge any fee deficiency for the processing of this Amendment, or credit any overpayment, to Deposit Account No. 19-4375.

Respectfully submitted,

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Date: February 11, 2008 By: _____

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